3 Temperature

3.1 General Description

Montana has a broad range of elevations, from 12,807 feet at Granite Peak to 1804 feet on the Kootenai River at the Idaho border. The mean elevation for the state is 3400 feet, as many of the western valleys are below 3000 feet, as is much of northeastern Montana. The average annual temperature for the whole state is 43.2°F (Fig. 1). Above 6000 feet, the temperature rarely exceeds 100°F. The warmest areas of the state are along the Wyoming border south of Billings, and in western Montana in some of the valleys near the Idaho border. The average high temperature in July at Miles City is 88.3°F, while at Yellowtail Dam it is 88.2°F. Mountain areas above 9000 feet have average maximums in July near 70°F. Summer nights are often cool even though daytime readings can reach the 90s. Mountain and high valley locations can drop below freezing during the summer.

In the winter, rapid and frequent temperature changes are common. Cold waves are not uncommon. The majority of the coldest air moves south east of the Continental Divide. Some cold waves area accompanied by "Alberta-clipper" systems that are rapidly moving and can cause blizzard conditions with snow across northeastern portions of the state. Blizzard conditions often occur along the plains of the northern Rocky Mountain Front as strong winds produce ground blizzards before the temperature warms above freezing. January is generally the coldest month, with average temperatures as low as 8.4°F at Westby. Average minimums are -2.5°F at Westby. In western Montana, Thompson Falls' average January temperature is 30.5°F. The daily maximum temperature map shows the warmest conditions east of the divide, south of Billings. For average annual minimum temperatures, the warmest areas are south of Flathead Lake, south of Billings, and along the shores of Fort Peck Reservoir. Figure 1 shows average annual temperatures in Montana and the rest of the nation. Figures 2 and 3 show the average annual maximum and minimum temperatures in Montana, respectively.

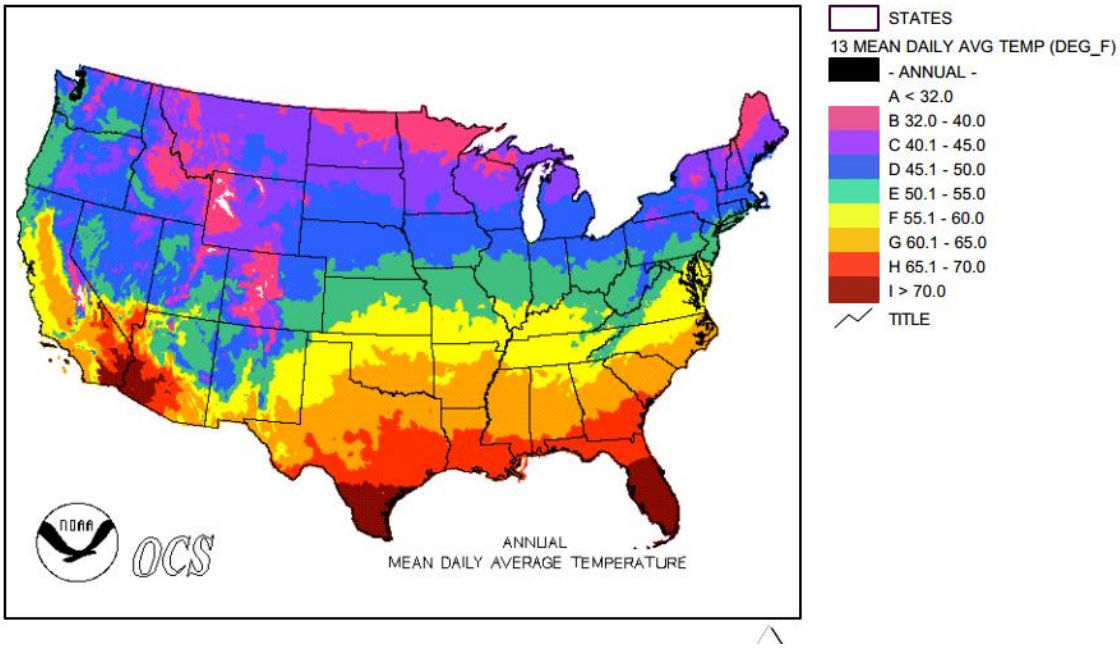


Figure 1. Average annual temperature map (Oregon Climate Service).

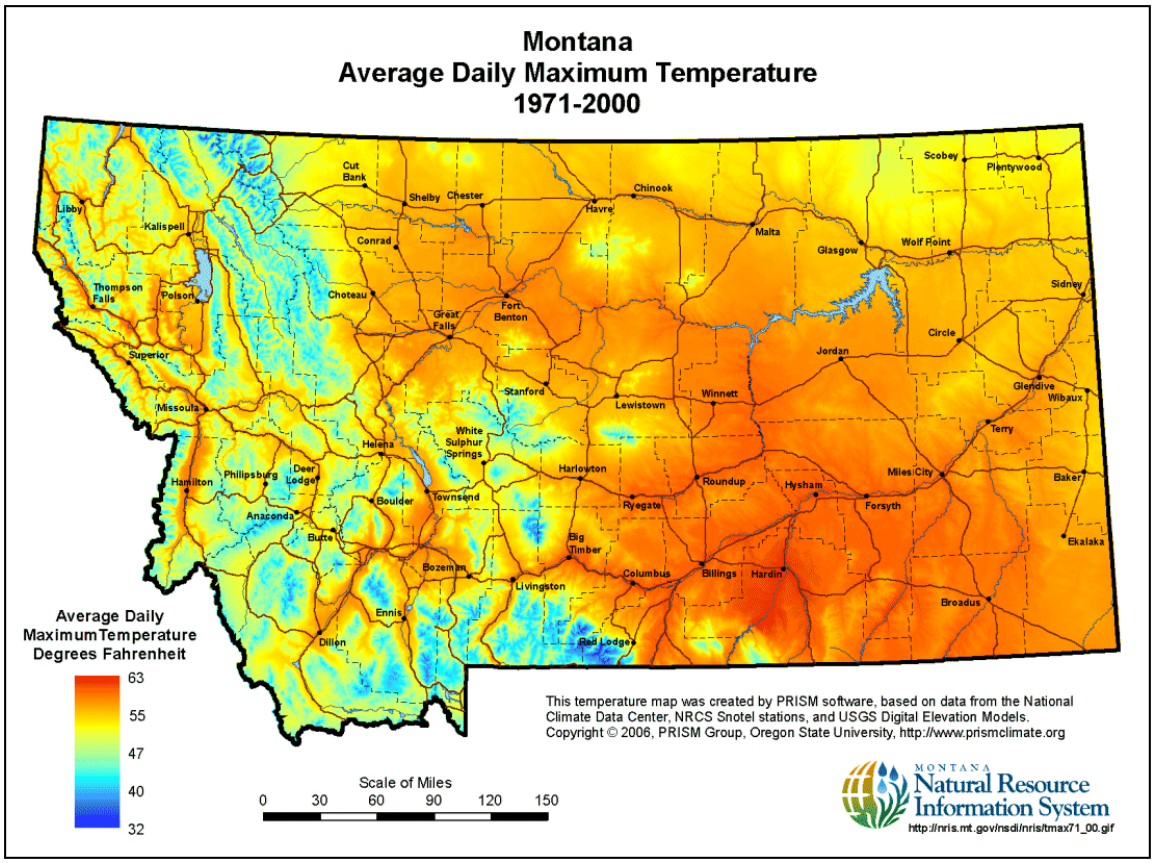


Figure 2. Average daily maximum temperature in Montana.

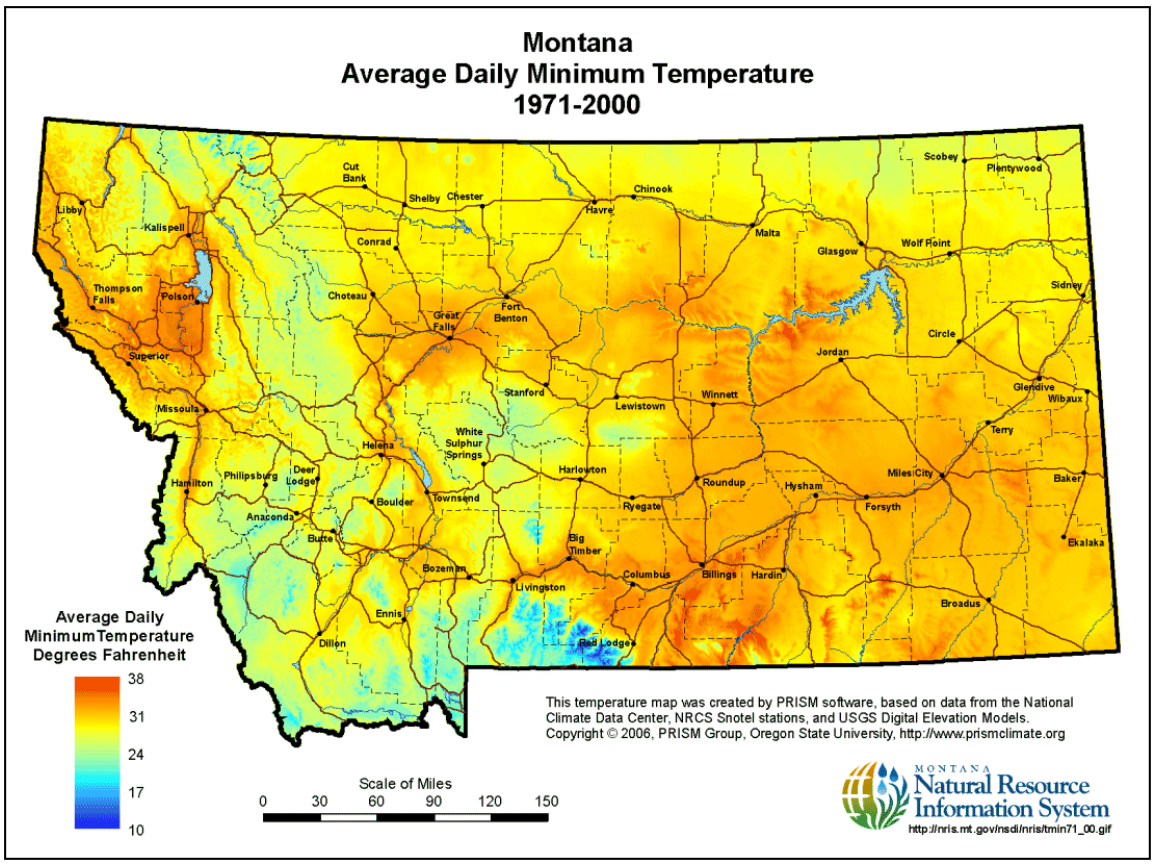


Figure 3. Average daily minimum temperature in Montana.

Warm periods in the winter can produce above freezing temperatures overnight. Chinooks are common along the eastern slopes. The valleys of the southwest and west are often cold at night. The colder, denser air settles into the valleys, with light winds and cause temperatures to drop well below 0°F. The lowest temperatures of the state have occurred during these conditions in western valleys. Rogers Pass dropped to -70°F, while West Yellowstone bottomed out at -66°F. Cold temperatures can persist for a long period of time. During the winter of 1970-71, West Yellowstone recorded 251 consecutive days on which the minimum temperature was 32°F or colder. In January 1950, the average monthly temperature at Outlook was -17.7°F. This month was the fourth coldest month in Montana weather history. They had 23 days where the maximum temperature remained below zero. Outlook also recorded 180 consecutive days with the low temperature of 32°F or colder from October 16, 1946 to April 14, 1950. This is the second longest such period in Montana. The longest period that any point has stayed below zero was 19 days at Havre in February 1936. The coldest month in Montana weather history was February 1936, with an average temperature of -2.2°F. Outlook had 56 days in a row where the low temperatures were below zero during the winter of 1949-50. From December 20, 1948 through February 9, 1949, Lake View reported low temperatures of 0°F or colder (52 days). The longest period that high temperatures have remained below freezing was 118 days at Lake View during the winter of 1948-49, from November 4, 1948 through March 1, 1949. During winter 1949-50, Outlook and Medicine Lake recorded 73 consecutive

days with the maximum temperature at 32°F or colder. Table 3.1 shows the warmest and coldest of each month for the state.

Table 3.1. Coldest and warmest months of record in Montana

Coldest and Warmest Months of record in Montana				
Month	**Coldest**	**Year**	**Warmest**	**Year**
January	-2.1°F	1916	31.2°F	2006
February	-2.2°F	1936	35.9°F	1991
March	18.5°F	1965	44.4°F	1910
April	34.1°F	1975	52.2°F	1915
May	47.2°F	1927	60.7°F	1934
June	54.5°F	1951	70.3°F	1988
July	59.6°F	1993	76.6°F	1936
August	62.0°F	1907	72.6°F	1971
September	45.5°F	1965	64.3°F	1888
October	35.2°F	1919	51.4°F	1963
November	13.4°F	1985	40.8°F	1904
December	4.1°F	1884	31.8°F	1896
Year	39.1°F	1951	46.7°F	1934

3.2 Temperature extremes

Temperature extremes are normal in Montana, with its varied terrain. The warmest temperature of 117°F occurred on the eastern plains at Glendive and Medicine Lake. The state's temperature range of 187°F is one of the largest of states. Medicine Lake has the honor of having the largest extreme temperature spread of any station in Montana. Their high of 117°F and low of -58°F is a range of 175°. This is one of the largest temperature ranges outside of the Russian Far East. Rogers Pass has a range of 170°F (100°F to -70°F).

High temperatures can be very warm, and very cold. The coldest high temperature at any point in the state was at Havre in January 1916 when the high temperature was -38°F on the 27th. This information in summarized in Tables 3.2, 3.3 and 3.4.

Table 3.2 Montana temperature records

Record Highest	117	20 July 1983 5 July 1937	Glendive Medicine Lake
Record Lowest	-70	20 January 1954	Rogers Pass
Highest Average Annual Temp	49.0		Thompson Falls & Yellowtail Dam
Lowest Average Annual Temp	34.4 34.7 32.0 33.2		West Yellowstone Cooke City Placer Basin Beaver Creek
Largest range from coolest to warmest month	°F	8°F Jan 67°F Jul	Westby
Smallest range from coolest to warmest month	36.5°F	23.5°F Jan 60.3°F Jul	Philipsburg
Warmest Month of record Montana	76.6°F 74.1°F	July 1936 July 2007	
Warmest monthly average	84.2F	July 1936	Miles City
Coolest Monthly average	-17.7F	Jan 1950	Outlook
Warmest/Coolest average Jan temp	29.0°F 28.4°F 8°F		Yellowtail Dam Thompson Falls Westby
Warmest/Coolest average July temp	73.9°F 55.3°F		Miles City Cooke City

Table 3.3 Montana monthly record temperature (°F)

Jan	78	7/1922	Big Timber	-70	20/1954	Rogers Pass
Feb	79	27/1932	Columbus	-66	9/1933	West Yellowstone
Mar	88	22/1910 29/1902	Miles City Lewistown	-45	15/1906 12/1897	Fort Logan Glasgow
Apr	97	26/1952 20/1980	Hysham Poplar	-30 -33	1940 2/2002	Summit Gates Park
May	105	22/1980	Nohly	-5 -6	1/1954 2/1995	Polebridge Placer Basin
Jun	112	26/1988 28/2002	Wolf Point Baker	11 10	6/1943 2/1917 6/1998	Kings Hill Brenner Placer Basin
Jul	117	20/1893 5/1937	Glendive Medicine Lake	15 12	18/1919 7/1986	Bowen Whiskey Creek
Aug	113	6/1983	Glendive	5	24/1910 25/1910	Grayling Bowen
Sep	107	1/1983 4/1950	Poplar Jordan	-9 -11	24/1926 21/1983	West Yellowstone Whiskey Creek

Oct	97	1/2011 1/1953	Powderville Miles City	-30	31/1935	Summit
Nov	85	5/1975	Grass Range	-53	16/1959	Lincoln 14NE
Dec	78	5/1939 1/1918	Crow Agency Choteau	-59	19/1924	West Yellowstone

Table 3.4 Extreme temperatures at select locations across Montana.

Billings	108	14 Jul 2002	-38	15 Feb 1936
Bozeman	106	6 Jul 2007	-46	24 Dec 1983
Butte	100	30 Jun 2000	-52	23 Dec 1983
Cut Bank	107	5 Aug 1961	-47	15 Feb 1936
Dillon	102	12 Jul 2002	-43	9 Feb 1933
Glasgow	113	30 Jun 1900	-59	15 Feb 1936
Great Falls	107	25 Jul 1933	-49	15 Feb 1936
Havre	111	5 Aug 1961	-57	27 Jan 1916
Helena	105	12 Jul 2002	-42	2 Feb 1996
Kalispell	105	4 Aug 1961	-38	31 Jan 1950
Lewistown	105	5 Aug 1961	-46	28 Jan 1929
Livingston	106	31 Jul 1901	-45	15 Feb 1936
Miles City	111	26 Jun 2012	-49	11 Feb 1899
Missoula	107	6 Jul 2007	-33	26 Jan 1957
West Yellowstone	99	13 Jul 2002	-66	9 Feb 1933

Temperature trends show that the most recent decade or so has generally experience above normal temperatures. The trend has been generally upward since 1985. A couple of years around 2010 averaged below normal temperatures, but there has been a persistent period over the past two decades with above normal temperatures. This is shown in Figure 4.

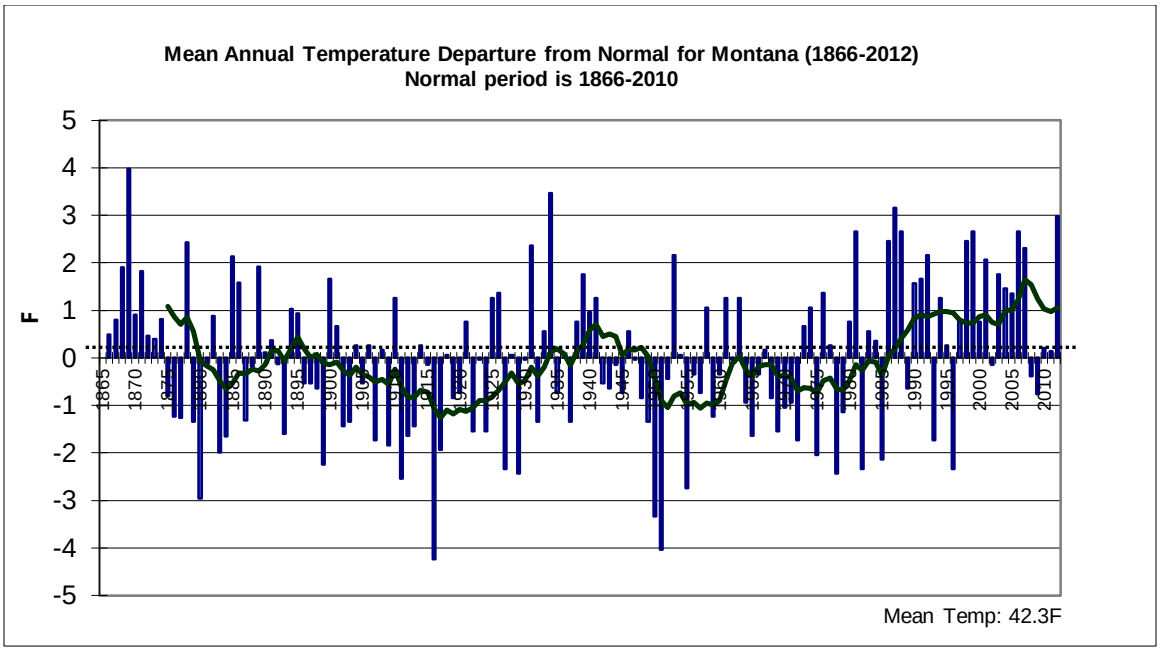


Figure 4. Mean annual temperature departures from normal for Montana. This is annual departures for each month from 1866-2012. The mean temperature for this period is 42.3F, with the departures taken from this value. An 11-year running mean is plotted as a solid line.

Mean monthly temperatures for the state are coolest in January and warmest in July. The following table (3.5) shows the mean statewide temperatures for each month.

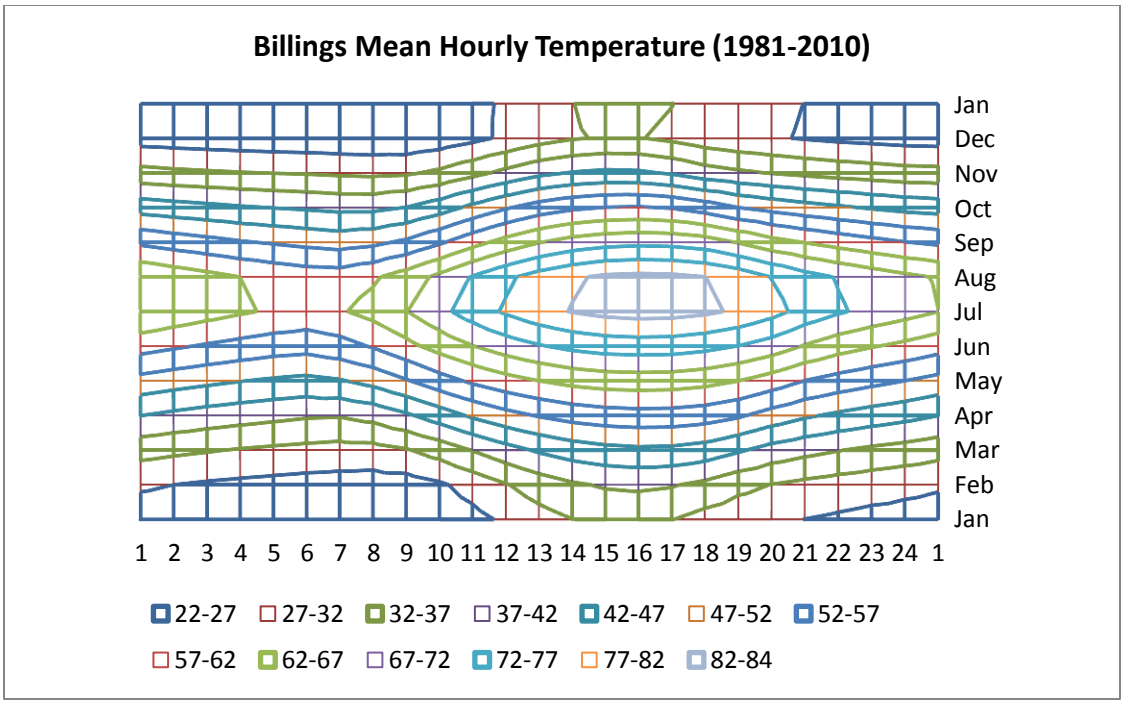
Table 3.5 Average monthly temperatures for Montana. Temperatures are in degrees Fahrenheit. Data is from NCDC.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
20.6	24.1	32.5	41.5	50.6	58.5	66.2	65.1	54.7	42.9	30.1	20.7	42.3

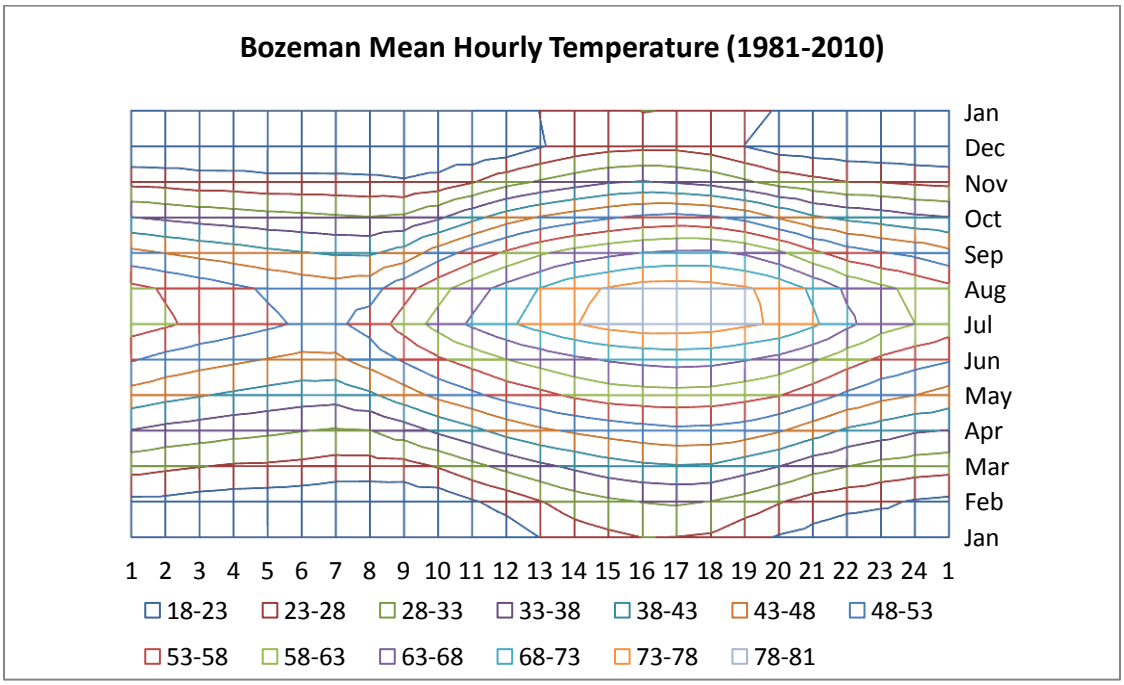
3.3 Hourly temperatures

The numbers of stations reporting hourly data are increasing. In 2014, National Climatic Data Center Local Climatological Data stations were Billings, Butte, Glasgow, Great Falls, Havre, Helena, Kalispell, Miles City, and Missoula. There were 34 other ASOS and AWOS locations across the state. Additionally, RAWS (110), CRN (5), MDT (70), SNOTEL (94), Agrimet (25), CWOP (76), SCAN (6), DavisNet (100), Wunderground (179), Missoula WFO (32), and other networks report.

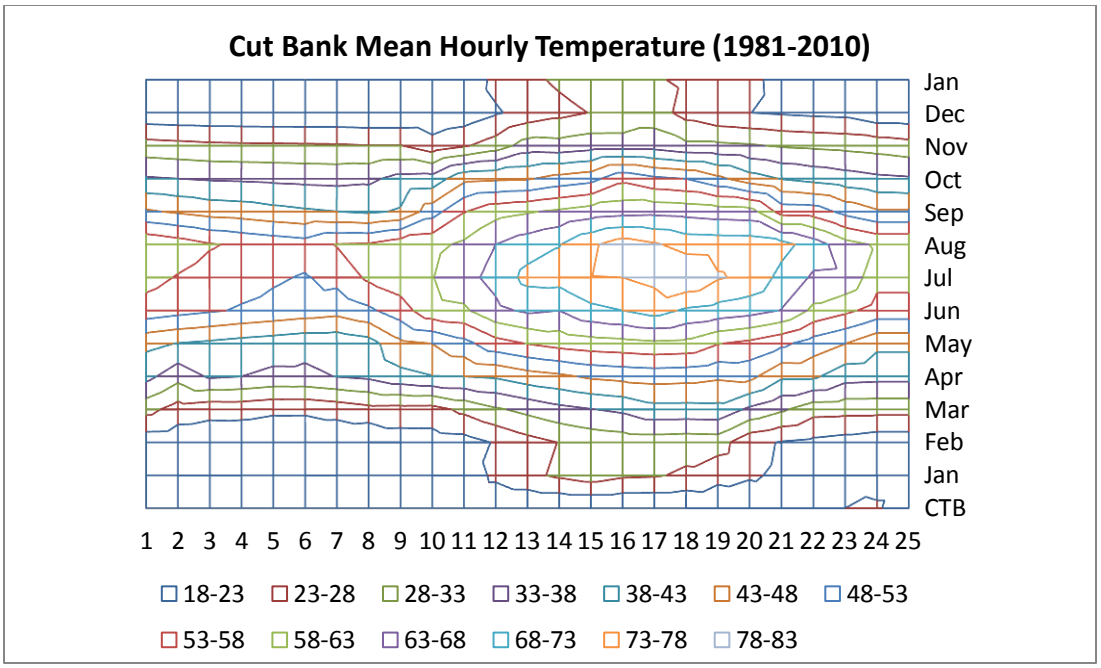
Following are charts showing the hourly temperature averages at several locations. The period of record is 1981-2010.



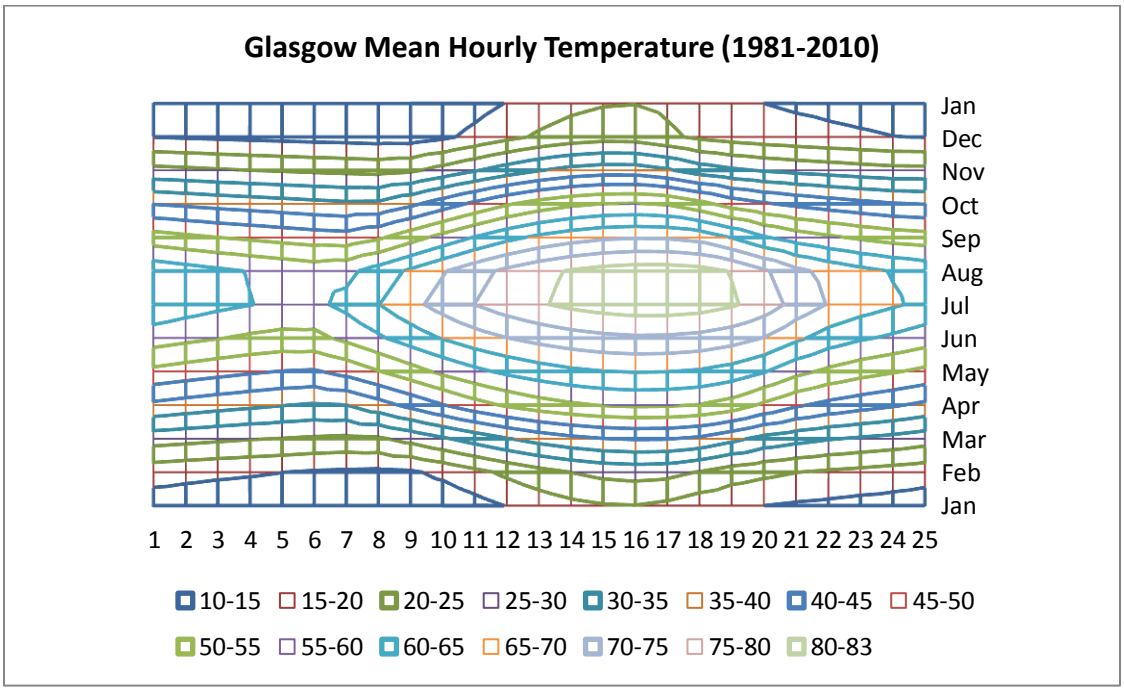
Billings mean hourly temperature as a function of month and hour of day.



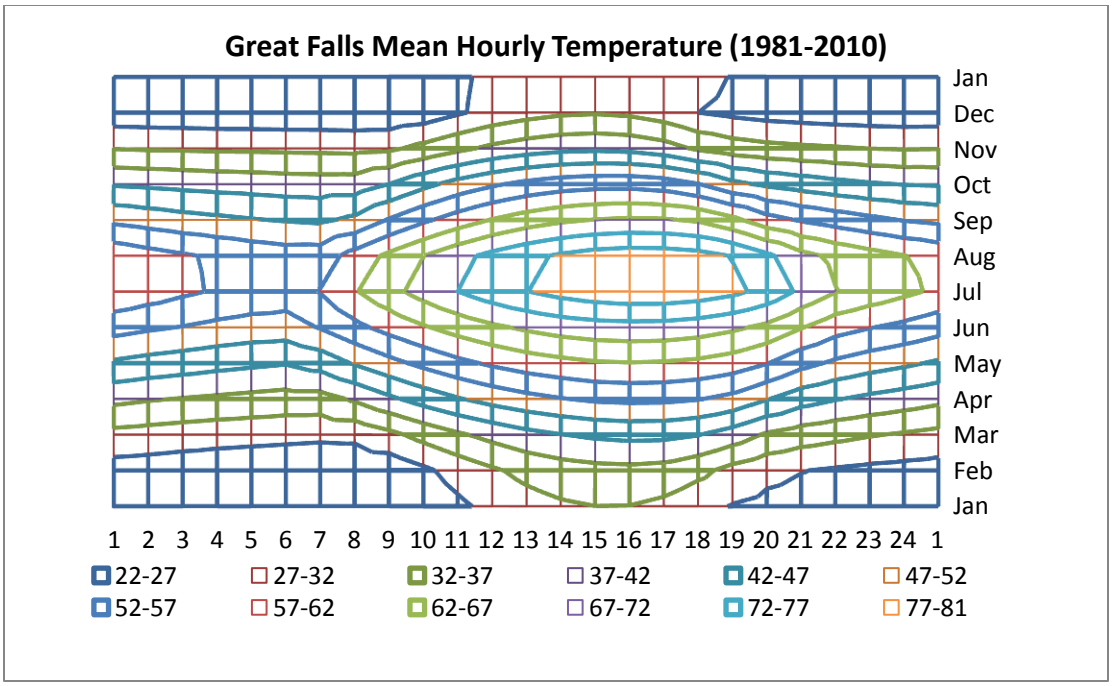
Bozeman mean hourly temperature as a function of month and hour of day.



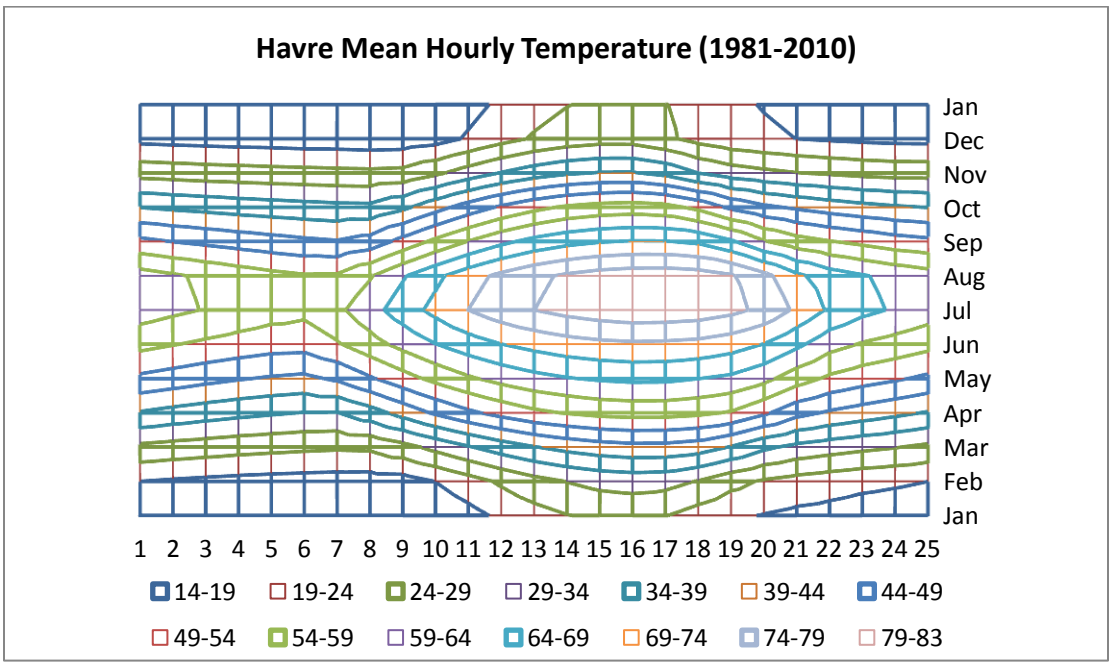
Cut Bank mean hourly temperature as a function of month and hour of day.



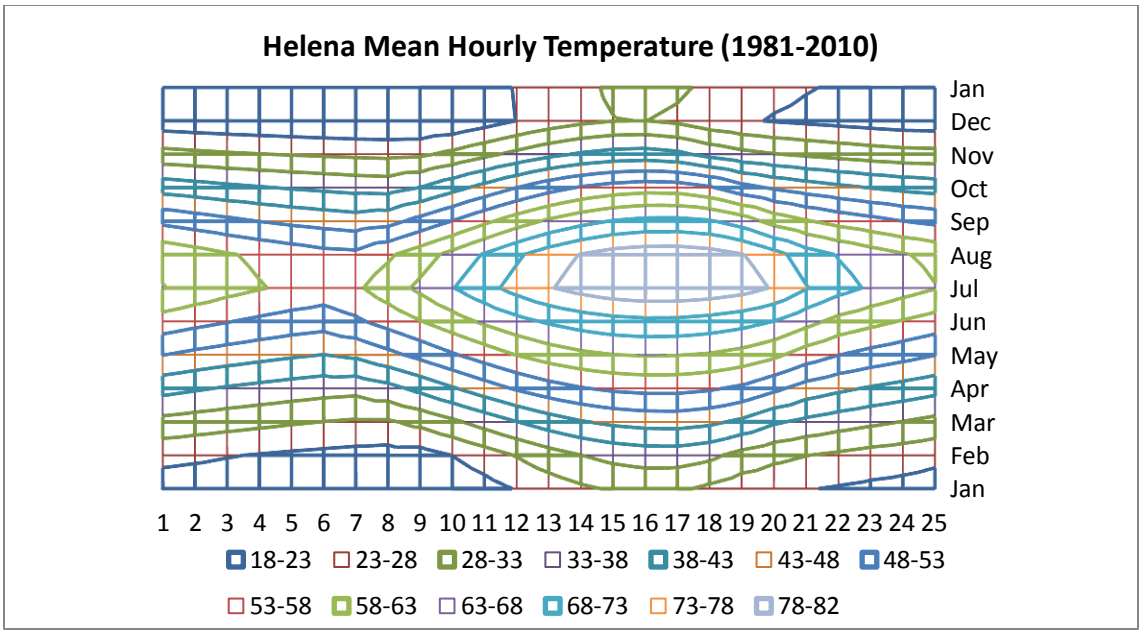
Glasgow mean hourly temperature as a function of month and hour of day.



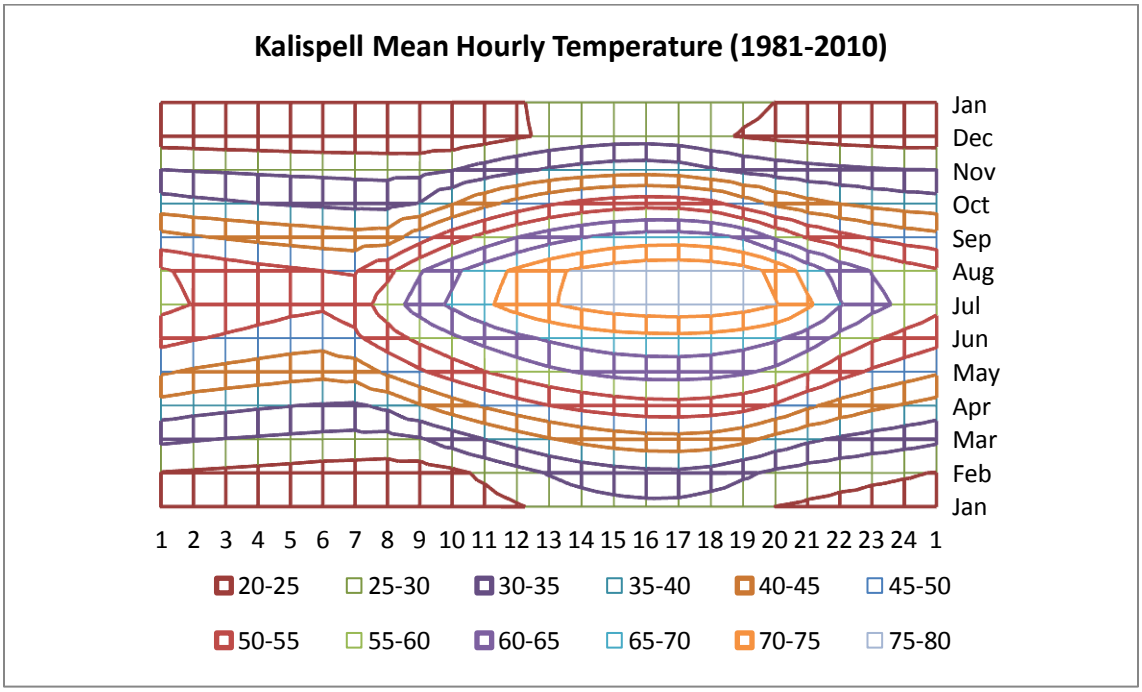
Great Falls mean hourly temperature as a function of month and hour of day.



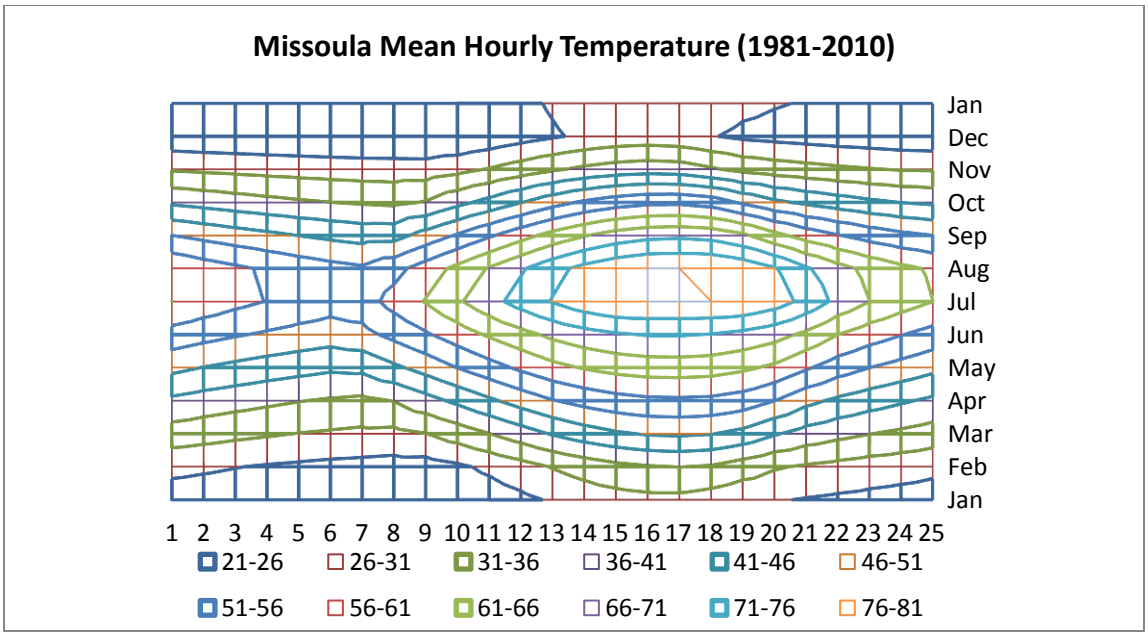
Havre mean hourly temperature as a function of month and hour of day.



Helena mean hourly temperature as a function of month and hour of day.



Kalispell mean hourly temperature as a function of month and hour of day.



Missoula mean hourly temperature as a function of month and hour of day.

3.4 Short-term temperature changes and extremes

Extreme short term temperature changes are also common in Montana. These extremes are most common during the winter season. The greatest 24-hour temperature change was 103°F which occurred when the temperature rose from -54°F to 49°F at Loma on January 14-15 1972. The greatest 24-hour temperature **fall** was 100°F when the temperature fell from 44°F to -56°F at Browning on January 23-24, 1916. Shorter-term changes were an 84°F temperature **fall** from 63°F to -21°F at Fairfield on December 14, 1924, in 12 hours. In seven hours, the temperature **dropped** 63°F (33°F to -30°F) at Fort Shaw on November 24, 1871. The most rapid temperature change was a **rise** of 47°F in seven minutes from -32°F to 15°F at Great Falls on January 11, 1980. Cut Bank had a **rise** of 29 degrees in one hour on December 16, 1979, from 1 to 2 pm MST (1 to 30 degrees). Over a two hour period from noon to 2 pm, their temperature went from -8 to 30, or 38 degrees. On December 15, 1979, the one hour temperature drop was 30 degrees at Helena, from 47 to 17F (2am to 3am). On November 18, 2013 a rapidly moving Canadian cold front caused temperatures to drop rapidly as it passed. At Cut Bank, the front passed through in the morning, dropping the temperature 23F in one hour (39 to 16) from 8 to 9 am. At Great Falls, the front passed through later in the day, with strong southwest winds warming the temperature to the middle 50s. As the front hit Great Falls at 356 pm MST, the temperature was 51F. Within two minutes it had dropped to 34 degrees (17 degrees), and in four minutes had dropped 20 degrees, to 31°F.

Table 3.6 Greatest 24-hour temperature changes at several locations across the state.

Billings	63°F	49F to -14F 50F to -13F	14-15 Dec 1979 30-31 Jan 1989
Bozeman	71°F	49F to -22F 8am	29-30 Nov 2014 8am-542 am

	67°F	-26F to 41F	30 Nov to 1 Dec 1975
Cut Bank	77°F	-38F to 39F	16 Dec 1979
Dillon	59°F	46F to -13F	15 Jan 1943
Glasgow	60°F	-28F to 32F	28 Jan 1977
Great Falls	77°F	54F to -23F	29-30 Jan 1989
Havre	69°F	42F to -27F	31 Dec 1938
Helena	72°F	49F to -23F	15 Dec 1979
Kalispell	65°F	48F to -27F	31 Dec 1924
Lewistown	73°F	52F to -21F	24 Jan 1916
Miles City	69°F	43F to -26F	31 Dec 1938
Missoula	59°F	38F to -21F	21 Jan 1935

Montana

1 minute	8 degrees GTF	51 to 43 356 pm	11/18/2013
2 minutes	17 GTF	51 to 34	11/18/2013
3 minutes	19 GTF	51 to 32	11/18/2013
4 minutes	20 GTF	51 to 31	11/18/2013
5 minutes	26 GTF	33 to 7 755 am	12/15/2000
6 minutes	26 LVM 22 GTF	47 to 21 753 am 51 to 29 356 pm	11/29/2014 11/18/2013
7 minutes	47 unofficial	-32 to 15	1/11/1980
9 minutes	27 GTF	52 to 25 335 pm	11/29/2014
10 minutes	23 GTF 27 Boulder Hill 36 CTB	51 to 28 356 pm 41 to 12 437 am 1 to 27 1050am	11/18/2013 11/29/2014 1/9/1994
11 minutes	24 Fort Benton	61 to 37 1259 pm	11/28/2014
12 minutes	25 Gary Cooper Br	53 to 28 536 pm	11/18/2013
15 minutes	28 GTF 27 Two Medicine 42 Ft Assinniboine	33 to 7 755 am 14.3 to -11.5 1115pm -5 to 37	12/15/2000 12/15/2009 1/19/1892
18 minutes	34 CTB	36 to 2 10 am	1/9/1994
20 minutes	25 GTF 28 Gary Cooper 33 Boulder Hill	51 to 26 53 to 25 536 pm 41 to 8 427 am	11/18/2013 11/18/2013 11/29/2014
21 minutes	31 Fort Benton	61 to 30 1259 pm	11/28/2014
22 minutes	25 GTF	47 to 22 850 am	12/14/1979
25 minutes	33 Fort Benton 30 GTF	61 to 33 1259 pm 33 to 3 755 am	11/28/2014 12/15/2000
30 minutes	33 Boulder Hill	41 to 8 427 am	11/28/2014
35 minutes	38 GTF	47 to 9 850 am	12/14/1979
42 minutes	42 GTF	47 to 5 850 am	12/14/1979
60 minutes	42 GTF 48 CTB 50 HVR	47 to 5 850 am 66 to 18 5 pm 54 to 4 1pm	12/14/1979 4/25/1992 12/22/1962
2hrs	46 GTF	47 to 1	12/14/1979

	54 LWT	-11 to 43 935 pm	12/29/1996
3 hrs	51 GTF 51 Kevin 58 LWT	47 to -4 -30 to 21 716am -13 to 43 835 pm	12/14/1979 2/9/2011 12/29/1996
4 hrs	55 GTF 58 LWT	47 to -8 -15 to 43 735 pm	12/14/1979 12/29/1996
5 hrs	57 GTF 58 LWT	49 to -8 8 pm -15 to 43 635 pm	12/14/1979 12/29/1996
6 hrs	58 LWT	50 to -8 7 pm	12/14/1979
7 hr	59 GTF 63 Fort Shaw	51 to -8 6pm 33 to -30	12/14/1979 11/24/1871
8 hr	60 GTF	52 to -8 5 pm	12/14/1979
9 hr	60 GTF 58 Fort Benton	52 to -8 4 pm 61 to 3 1259 pm	12/14/1979 11/28/2014
10 hr	63 GTF	55 to -8 3 pm	12/14/1979
11 hr	63 GTF	55 to -8 3 pm	12/14/1979
12 hr	64 GTF 84 Fairfield	55 to -9 3 pm 62 to -21 12 pm	12/14/1979 12/14/1924
24 hr	103 Loma 100 Browning 77 GTF	-53 to 49 44 to -56 (18hrs) -23 to 54	1/14-15/1972 1/23-24/1916 1/29-30/1989

Billings

1 hr	22	48 to 26 7 am	1/31/1989
2 hrs	31	48 to 17	1/31/1989
3 hrs	40	46 to 6 2am	12/15/1979
6 hrs	50	46 to -4	12/15/1979
9 hrs	50	48 to -2 5am	1/31/1989
12 hrs	57	48 to -9 5am	1/31/1989

Bozeman

15 minutes	15	-7 to -22 521 am	11/30/2014
37 minutes	14	49 to 35 8am	11/29/2014
60 minutes	20 16	19 to 39 5 pm 27 to 43 12 pm	12/27/1996 12/29/1996
2 hrs	24 24	42 to 18 19 to 43 11 am	12/14/1979 12/29/1996
3 hrs	27 27 29	49 to 21 8am 17 to 43 11am 10 to 39 4 pm	11/29/2014 12/29/1996 12/27/1996
4 hrs	31 32 35	12 to 43 10 am 7 to 39 10 am 49 to 14 8am	12/29/1996 12/27/1996 11/29/2014
5 hrs	33 47	10 to 43 9 am 49 to 2 8am	12/29/1996 11/29/2014

6 hrs	35 36 46	10 to 45 9 am 3 to 39 12 pm 49 to 3 8am	12/29/1996 12/27/1996 11/29/2014
7 hrs	36 44	9 to 45 8 am 49 to 5 8am	12/29/1996 11/29/2014
8 hrs	36 45	9 to 45 7 am 49 to 4 8am	12/29/1996 11/29/2014
9 hrs	38 47	7 to 45 6 am 49 to 2 8am	12/29/1996 11/29/2014
10 hrs	48	49 to 1 8am	11/29/2014
11 hrs	48	49 to 1 8am	11/29/2014
12 hrs	49	49 to 0 8 am	11/29/2014

Cut Bank

2 minutes	20	-4 to 16 456 pm	1/14/1972
10 minutes	36	1 to 37 1050 am	1/9/1994
18 minutes	34	36 to 2 10 am	1/9/1994
37 minutes	27	40 to 13 10 pm	12/8/1976
50 minutes	35	36 to 1 10 am	1/9/1994
1 hr	40 41 48	-6 to 36 12 pm 38 to -3 12 pm 66 to 18 5pm	12/22/1989 12/14/1979 4/25/1992
2 hrs	45 47	38 to -7 6pm -11 to 36 11 am	12/14/1979 12/22/1989
3 hrs	49	-13 to 36 10 am	12/22/1989
4 hrs	52	-16 to 36 9 am	12/22/1989
5 hrs	54	-18 to 36 8 am	12/22/1989
6 hrs	55	-19 to 36 7 am	12/22/1989
7 hrs	56 58	-20 to 36 6 am -23 to 35 9 am	12/22/1989 12/16/1979
8 hrs	66	-31 to 35 8am	12/16/1979
9 hrs	67	-32 to 35 7 am	12/16/1979

Dillon

1 hr	26	48 to 22 138 pm	12/15/1979
2 hrs	37	48 to 11 138 pm	12/15/1979
3 hrs	41	48 to 7 138 pm	12/15/1979
4 hrs	45	48 to 3 138 pm	12/15/1979
16 hrs	61	48 to -13 1153 am	11/29-30/2014

Glasgow

1 hr	19	25 to 44 1153 pm	1/26/2003
2 hrs	18	52 to 34 2pm	12/14/1979

1/16/2015

	25	19 to 44 1053 pm	1/26/2003

Glendive

20 minutes	15	28 to 43 1115pm	1/26/2003
40 minutes	22	21 to 43 1055pm	1/26/2003
60 minutes	24	21 to 45 1115 pm	1/26/2003

Great Falls

1 minute	8 degrees	51 to 43 356 pm	11/18/2013
2 minutes	17	51 to 34	11/18/2013
3 minutes	19	51 to 32	11/18/2013
4 minutes	20	51 to 31	11/18/2013
5 minutes	21 26	51 to 30 33 to 7 755 to 8 am	11/18/2013 12/15/2000
6 minutes	22	51 to 29	11/18/2013
7 minutes	47* Unofficial	-32 to 15	1/11/1980
9 minutes	27	52 to 25 335 pm	11/28/2014
10 minutes	27 23	52 to 25 335 pm 51 to 28 356 pm	11/28/2014 11/18/2013
15 minutes	24 27 28	51 to 27 356 pm 52 to 25 335 pm 33 to 5 755 to 810 am	11/18/2013 11/28/2014 12/15/2000
18 minutes	30	52 to 22 356 pm	11/28/2014
20 minutes	25	51 to 26 356 pm	11/18/2013
22 minutes	25	47 to 22 850-912 pm	12/14/1979
25 minutes	30	33 to 3 755 to 820 am	12/15/2000
32 minutes	33	52 to 19 335 pm	11/28/2014
35 minutes	38	47 to 9 850 – 925 pm	12/14/1979
42 minutes	42	47 to 5 850 – 937 pm	12/14/1979
60 minutes	42	47 to 5	12/14/1979
2hrs	46	47 to 1	12/14/1979
3 hrs	51	47 to -4	12/14/1979
4 hrs	55	47 to -8	12/14/1979
5 hrs	57	49 to -8 8 pm	12/14/1979
6 hrs	58	50 to -8 7 pm	12/14/1979
7 hr	59	51 to -8 6pm	12/14/1979
8 hr	60	52 to -8 5 pm	12/14/1979
9 hr	60	52 to -8 4 pm	12/14/1979
10 hr	63	55 to -8 3 pm	12/14/1979
11 hr	63	55 to -8 3 pm	12/14/1979
12 hr	64	55 to -9 3 pm	12/14/1979
15 hr	64	54 to -8 253 pm	11/29/2014

Havre

15 min	42	-5 to 37	1/19/1892

1 hr	50 36	54 to 4 1 pm 2 to 34 3 am	12/22/1962 1/7/1996
2 hr	51 40 39	54 to 3 1 pm -4 to 36 10am 7 to 46 9 am	12/22/1962 1/15/1972 1/12/1980
3 hr	53 45	54 to 1 1 pm 1 to 46 8 am	12/22/1962 1/12/1980
4 hr	53 46	54 to 1 1 pm 0 to 46 7 am	12/22/1962 1/12/1980
5 hr	44 46	54 to 10 0 to 46 7 am	12/14/1979 1/12/1980
6 hr	47 48	54 to 7 -2 to 46 5 am	12/14/1979 1/12/1980
7 hr	49	54 to 5	12/14/1979
8 hr	52	54 to 2	12/14/1979
9 hr	54	54 to 0	12/14/1979
10 hr	56	54 to -2	12/14/1979
11 hr	58	54 to -4	12/14/1979
12 hr	59	54 to -5	12/14/1979

Helena

1 hr	30	47 to 17 2 am	12/14/1979
2 hrs	34	47 to 13	12/14/1979
3 hrs	37	47 to 10	12/14/1979
4 hrs	44	47 to 3	12/14/1979
5 hrs	48	47 to -1	12/14/1979
6 hrs	50	47 to -3	12/14/1979
7 hrs	51	47 to -4	12/14/1979
8 hrs	51	47 to -4	12/14/1979
9 hrs	52	47 to -5	12/14/1979
10 hrs	54	52 to -2 953 pm	11/29-30/2014

Kalispell

1 hr	18	40 to 22 5 am	12/14/1979
2 hrs	24	40 to 16	12/14/1979

Lewistown

1 hr	43	-7 to 36 5 pm	12/28/1949
1 hr 50 min	54	-11 to 43 935 pm	12/29/1996
2 hrs	37 54	46 to 9 9 pm -11 to 43 935 pm	12/14/1979 12/29/1996
3 hrs	44 58	46 to 2 -13 to 43 835 pm	12/14/1979 12/29/1996
4 hrs	50 58	46 to -4 -15 to 43 735 pm	12/14/1979 12/29/1996

5 hrs	52 58	46 to -6 -15 to 43 635 pm	12/14/1979 12/29/1996
6 hrs	54	46 to -8	12/14/1979
7 hrs	56	46 to -10	12/14/1979
8 hrs	57	47 to -10 8 pm	12/14/1979
9 hrs	59	49 to -10 7 pm	12/14/1979
10 hrs			
11 hrs	60	50 to -10 5pm	12/14/1979
12 hrs	62	52 to -10 4 pm	12/14/1979

Livingston

6 minutes	26	47 to 21 753 am	11/29/2014
1 hr	34 32	40 to 6 655 am 47 to 15 753 am	12/15/1979 11/29/2014
2 hrs	38 34	40 to 2 753 am 47 to 13 753 am	12/15/1979 11/29/2014
3 hrs	39 36	40 to 1 753 am 47 to 13 753 am	12/15/1979 11/29/2014
4 hrs	40 39	40 to 0 753 am 47 to 8 753 am	12/15/1979 11/29/2014
5 hrs	42	47 to 5 753 am	11/29/2014
6 hrs	40	40 to 0	12/15/1979
9 hrs	44	40 to -4	12/15/1979

3.5 Average frost dates in spring and fall

Widely varying terrain and higher altitudes provide Montana with a wide range of last spring and first fall frost dates. The following figures show the average dates of the last spring freeze date, and 28°F or cooler date, along with the same criteria for fall. Note the variability over the mountains and valleys of the west. Eastern Montana has less variability over the region. Figures 3.5.1 – 3.5.4 show the dates of the spring and fall frosts and dates of the 28°F low.

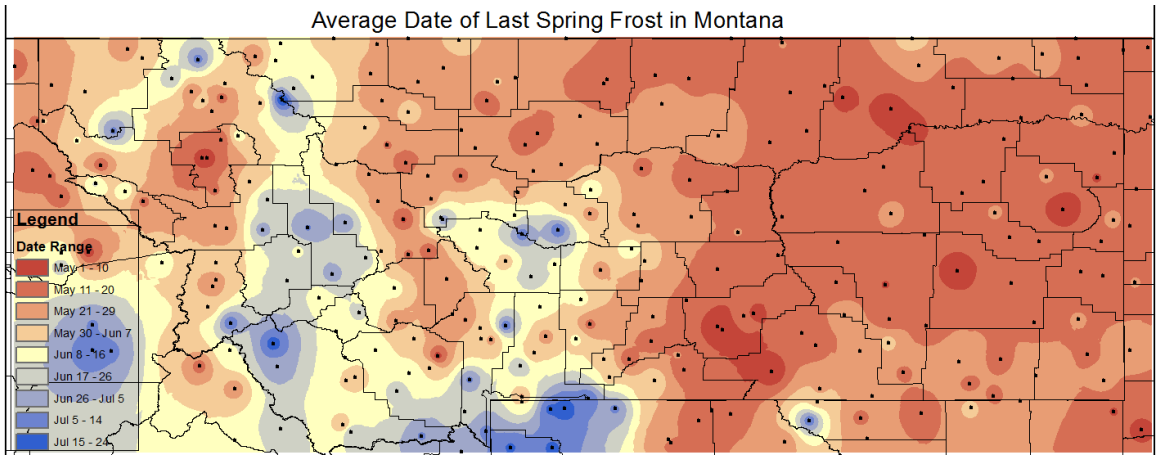


Figure 3.5.1. Average date of last spring frost.

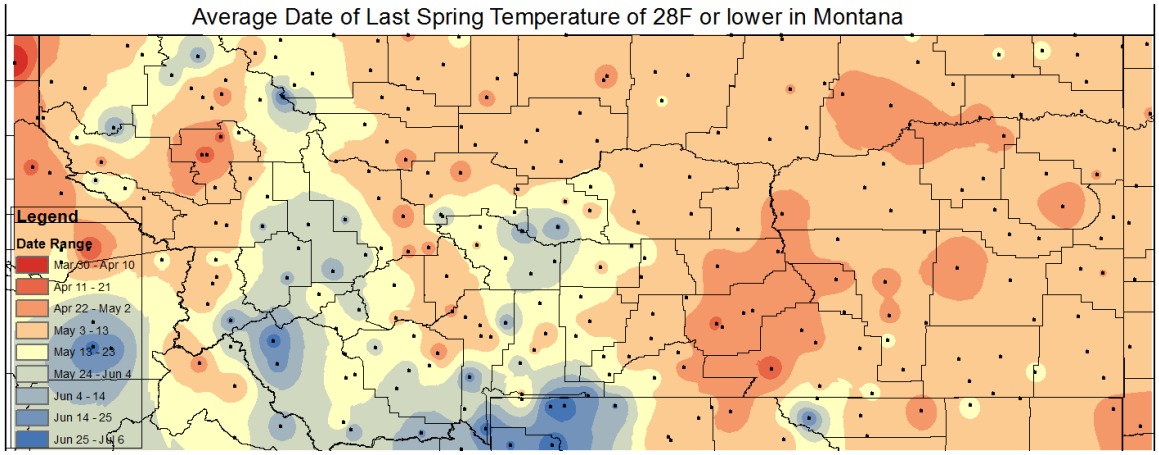


Figure 3.5.2. Average date of last spring low of 28°F or lower.

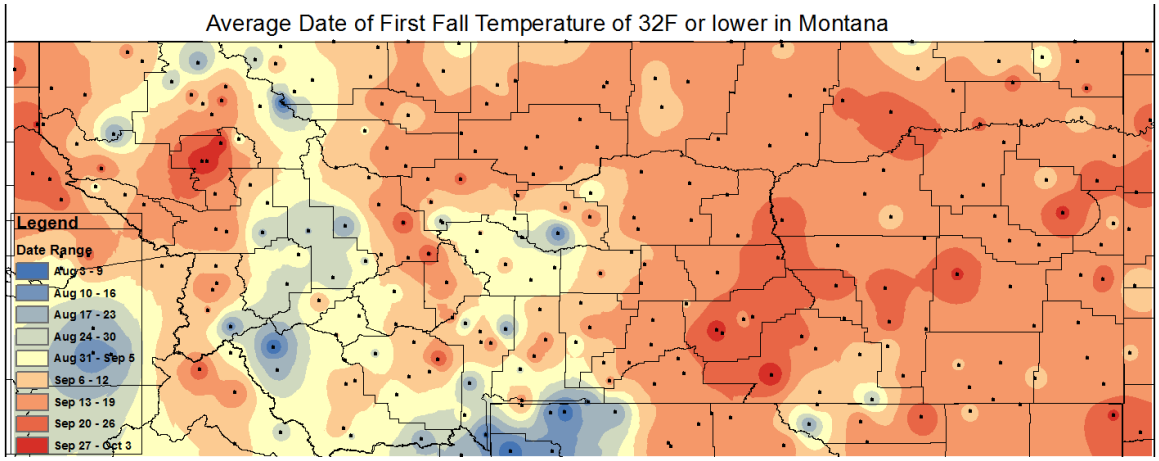


Figure 3.5.3. Average date of first fall frost.

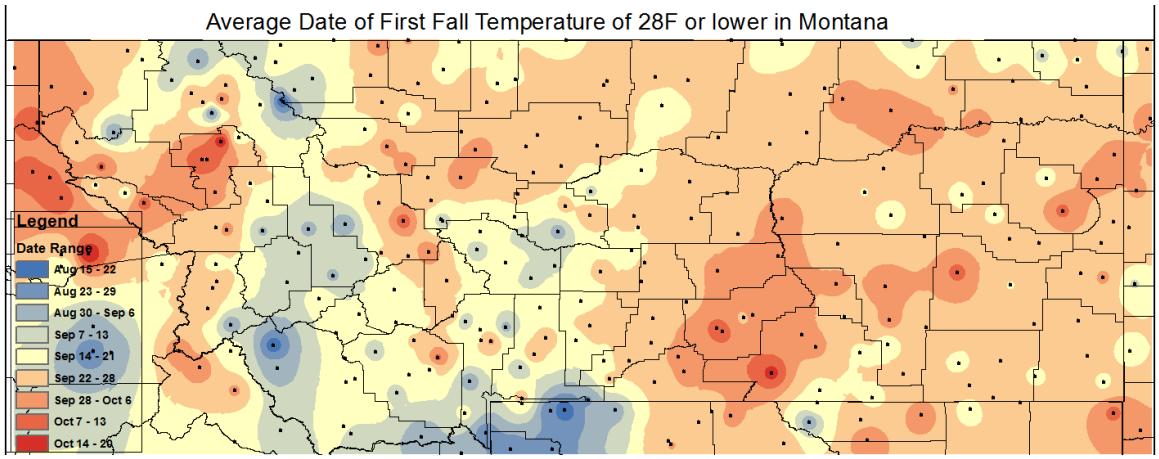
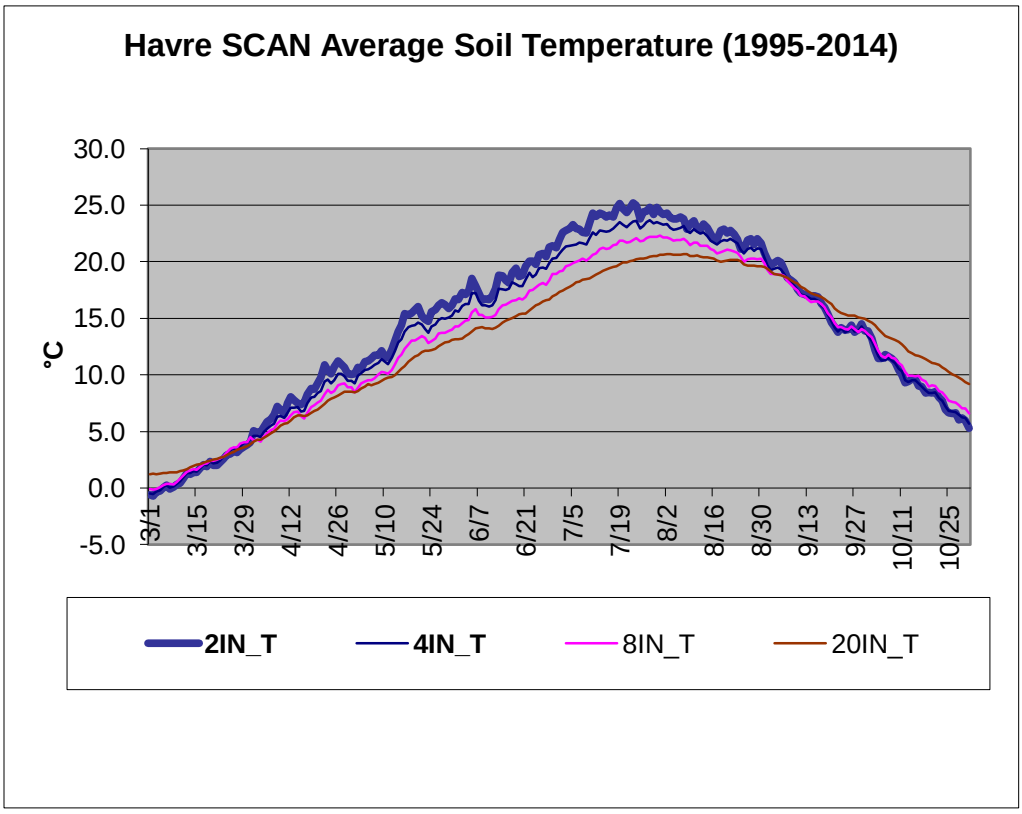


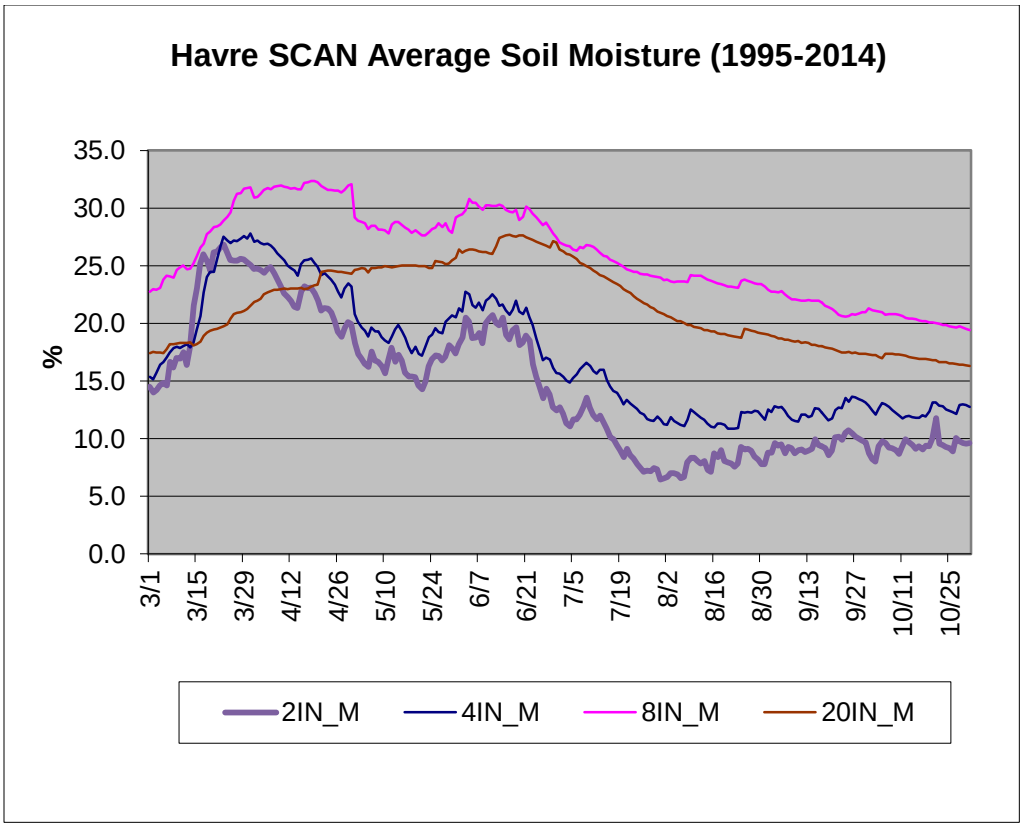
Figure 3.5.4. Average date of first fall low of 28°F or lower.

3.6 Soil temperature and moisture

Soil temperatures warm during the season, as do air temperatures. The coolest soil temperatures occur during the winter months, while the warmest are in late July and early August.



Havre area daily average soil temperatures.



Havre area daily average soil moisture.